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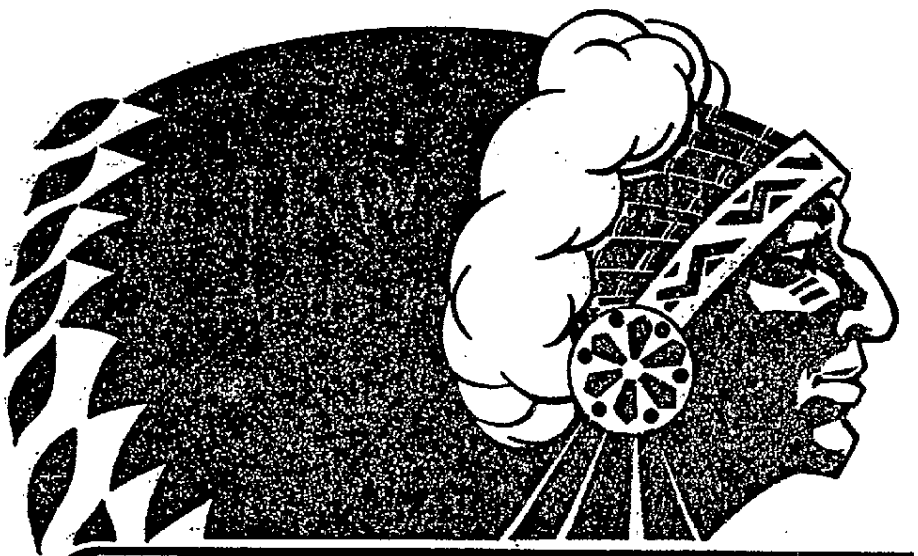

SIOUX®

BERESFORD, SOUTH DAKOTA 57004

INSTRUCTION MANUAL
MODEL 514-4
ELECTRIC
230/3/60
SERIAL NO. 068955

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When the liquid in the container becomes to low and is not being drawn up into the pump the unit will start to cycle very fast. At that time, shut off the air inlet ball valve and mix another batch of cleaning solution in the drum.

Upon the completion of any foam cleaning using this foamer, clear water should be pumped through the pump and out the wand. This will greatly enhance the life and performance of the TEX-O-FOAMER.

To be sure the pump operates smoothly, always maintain an adequate amount of #10 viscosity lubricating oil in the oiler.

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SIOUX PART NO. 10H12

IMPORTANT:
READ ALL INSTRUCTIONS BEFORE USING SPRAY GUN

SEE DATA SHEET 18208 AND PARTS LIST PL60, 60W ATTACHED
(FOR 60-B3/8 AND 60-W-B3/8 WITH 3/8" BSPT INLET CONN. SEE PL60B, 60W-B)

SAFETY PRECAUTION: THIS IS A HIGH PRESSURE DEVICE WHICH SHOULD ONLY BE USED IN A PROPERLY ENGINEERED SYSTEM. THIS SPRAY GUN SHOULD BE OPERATED ONLY BY TRAINED OPERATORS AND KEPT OUT OF REACH OF CHILDREN. PLEASE READ THE FOLLOWING INSTRUCTION SHEETS BEFORE ATTEMPTING TO OPERATE THE #60 HIGH PRESSURE GUNJET SPRAY GUN.

HEED THESE WARNINGS OR SERIOUS AND PERMANENT INJURY MAY RESULT:

1. DO NOT aim gun at any person or any part of the body. Fluids under high pressure can penetrate the human skin and can cause severe injury, possibly resulting in amputation or death. Hot liquids and chemicals can also cause burns or injury. If any part of the body comes in contact with the spray stream, immediately consult a physician.

2. DO NOT at any time place hand or any other part of the body in front of spray nozzle or tip.

3. DO NOT alter equipment in any manner; if repairs are necessary, use only genuine factory repair parts supplied by SPRAYING SYSTEMS CO.

4. DO NOT exceed maximum operating pressure of the lowest rated accessory item within the spray system, even though some of the accessories have a higher maximum pressure rating.

5. DO NOT leave equipment under pressure unattended at any time. Relieve pressure by shutting off power to pump, turning off the liquid supply to the pump, and actuating Trigger until all fluid ceases to flow; then position Trigger Lock to the "locked" position.

6. DO NOT use damaged, perforated, or weakened fluid hose.

7. DO NOT use a Gunjet with a faulty or damaged Trigger Lock.

8. DO NOT operate a spray gun if there are any leaks from the packings, fittings, hoses, etc. Fluids which are under high pressure can penetrate skin, cloth, etc. and cause serious injury.

9. DO NOT touch any metal parts of the gun or accessories when spraying hot liquids or severe injury can occur.

WARNING: WHEN THE SPRAY NOZZLE OR TIP HAS BEEN REMOVED, A SPRAY GUN BECOMES MORE DANGEROUS BECAUSE A GREATER VOLUME OF LIQUID CAN BE EMITTED FROM THE OUTLET OF THE GUN AT HIGH VELOCITY.

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SAFETY SHOULD ALWAYS BE OBSERVED:

1. DO use a "two-handed" control of #60 Gunjet at all times. Grasp spray gun firmly with both hands. If an extension is used, grasp the extension. (Insulated extension if spraying hot liquids).

2. DO adopt a secure body stance prior to and during spray operation to safely control the high reactionary force of this unit.

3. DO impress on other people in the spraying area the importance of obeying strict safety precautions for everyone's safety.

4. DO develop a habit of shutting off the power to the pump, relieving fluid pressure from gun and hose by actuating trigger until all fluid ceases to flow, and setting the Trigger Lock in the locked position, before attempting to remove the tip, nozzle, gun or any part of the gun.....or when gun is not in use.

5. DO check operation of Trigger Lock before each spray period. Trigger Lock must hold the Trigger to its forward position. (Adjust if necessary - see section, Trigger Adjustment Procedure.)

6. DO carefully check and tighten threaded connections regularly. Make them secure and leakproof.

7. DO flush gun after each spray period, using the same safety precautions as used during spraying operations. Always use the lowest possible pressure for flushing.

8. DO keep gun clean and dry to allow for positive grip.

9. DO use Gunjet in a well ventilated area and make sure spray gun is grounded properly when used in a possibly explosive or inflammable environment.

IMPORTANT: IN CASE OF THE SLIGHTEST APPEARANCE OF SKIN PENETRATION FROM SPRAY, CONSULT A PHYSICIAN IMMEDIATELY.

INSTALLATION:

1. Before installing Gunjet to hose, select Washjet Tip or Washjet Nozzle and, if desired, an appropriate extension for your application. Install on gun with tip or nozzle positioned for your particular spraying needs and tighten.

2. Attach Gunjet to high pressure hose with rating to meet or exceed the maximum operating pressure to be used. When spray gun is being used in a possible explosive or flammable environment, a grounded type hose should be used.

3. Follow your pump and component parts manufacturer's recommendations for operation, but in any case, do not exceed the pressure or temperature of the lowest rated component within the system.

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BEFORE YOU INSTALL AND OPERATE YOUR NEW SIOUX EQUIPMENT, WE SUGGEST THAT YOU READ THIS MANUAL. IT CONTAINS INFORMATION TO ASSIST YOU IN PROVIDING TROUBLE-FREE OPERATION. CHAPTER 1, "INSTALLATION REQUIREMENTS," IS EXTREMELY IMPORTANT! YOU CANNOT HAVE SMOOTH, EFFICIENT OPERATION WITHOUT ADEQUATE ELECTRICALS AT THE MACHINE AND SUFFICIENT WATER SUPPLY.

BASICS OF HOW A HIGH PRESSURE WASHER WORKS

Water enters the float tank by way of the water supply hose. It passes through the float valve which shuts off the water flow when the float tank is full. The pump draws the water through the sediment strainer and out the bottom of the float tank.

The solution tank is filled with water by opening the valve at the water inlet. The desired quantity of Sioux Powder Cold Pressure Wash Detergent is added prior to starting the operation and can be introduced into the system by opening the solution valve.

The water solution is forced by the pump through the hose and gun, discharging through the tip at high pressure.

* *

Our information is based on our experience in the industry since 1939.

We also have incorporated information from outside industrial sources.

This information is as complete as possible and we believe it to be accurate. However, we cannot assume responsibility for any errors, omissions or engineering changes encountered during or after publication of this manual.

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CHAPTER I - INSTALLATION REQUIREMENTS

Section A - ELECTRICAL REQUIREMENTS

1. ADEQUATE ELECTRICALS ARE CRITICAL TO SATISFACTORY OPERATION OF THE EQUIPMENT.

Find the horse power requirements as listed below and provide the recommended electricals for your unit. The electrical manufacturer, in accordance with NEMA Standards, requires these electricals:

Total Horse Power Requirements	230/3/50-60		460/3/50-60	
	Wire Gauge	Circuit Breaker	Wire Gauge	Circuit Breaker
3	12	30	14	12
5	10	40	14	20
7½	8	50	12	30
10	6	50	10	40

INADEQUATE ELECTRICAL CAPACITY WILL RESULT IN ERRATIC OPERATION, UNSCHEDULED SHUTDOWNS DUE TO OVER-LOAD, AND FAILURE OF ELECTRICAL EQUIPMENT DUE TO OVERHEATING.

2. Circuit breakers are the transitional equipment built to provide sufficient power from the main electrical system to the local system and are designed to take the maximum surge of power required to place the equipment in operation. (Note: A circuit breaker is the not same as a fuse.)

The initial surge of power required when starting up the equipment is much greater than the operating current requirements.

3. 90% of the time trouble with the washer is due to inadequate electrical power AT THE EQUIPMENT WHILE UNIT IS OPERATING.

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CHAPTER I - SET-UP PROCEDURE

Section B - WATER SUPPLY REQUIREMENTS

1. WATER SUPPLY AVAILABLE SHOULD BE 150% OF THE RATING OF THE UNIT AT ALL TIMES, SUFFICIENT TO KEEP WATER IN THE FLOAT TANK DURING OPERATION. (i.e., a unit rated at 2 gallons per minute (GPM) needs a water supply of 3 gallons per minute (GPM).

2. DO NOT ALLOW DEMAND AT OTHER OUTLETS TO STARVE WATER SUPPLY TO UNIT.

3. WATER PRESSURE SHOULD NOT BE EXCESSIVE. If water pressure is over 50 Pounds per square inch (PSI), it may not permit the float valve to seat properly and a pressure reducing valve should be installed. Contact your local utility, heating/plumbing wholesaler or Sioux Steam Cleaner Corporation for assistance.

4. IN SOME AREAS IT IS NECESSARY TO CONDITION THE WATER. Contact your local water conditioning representative for analysis or recommendations.

5. DO NOT USE RUSTY OR SANDY WATER.

6. Water inlet temperature should not exceed 140°F.

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CHAPTER III - OPERATION

Section A - Set-Up Procedure

To Set-up unit for operation, proceed as follows:

1. Unpack and inspect unit for damage in shipment. Tighten fittings as they may have been loosened by vibration during shipment.

2. Each unit has a washer hose, washer gun, and wash tips of different spray angles. Each end of hose is furnished with quick couplers.

3. Attach the washer gun to the high pressure washer hose. Attach wash nozzle later after water tanks, pump, hoses, and wash gun have been cleared of foreign matter.

4. Connect the washer hose to the discharge outlet of the unit.

5. Connect water source, preferable an extra-heavy garden hose, to the float tank inlet. Provide solid brass fittings on garden hose.

6. Connect the unit TO PROPER ELECTRICAL OUTLET, USING ELECTRICAL CORDS OF HEAVY-DUTY GROUNDED WIRE OF SUFFICIENT WIRE SIZE TO ASSURE PROPER VOLTAGE AT THE MACHINE. Alternatively, equipment can be wired in direct by a qualified electrician using appropriate conduit wiring. See "Electrical Requirements," Chapter 1, Section A.

7. The unit is now ready for operation. Refer to Chapter III, Section B, "Operation For High Pressure Washing."

NOTE

BE ABSOLUTELY CERTAIN UNIT HAS ADEQUATE AND GROUNDED ELECTRICALS AT THE MACHINE, AND A STEADY SUPPLY OF WATER BEFORE BEGINNING OPERATION.

Section B - OPERATION FOR HIGH PRESSURE WASHING

1. Turn on water supply to unit. KEEP WATER SUPPLY ON WHENEVER THE UNIT IS OPERATING.

2. Adjust float valve as required to provide CONSTANT SUPPLY OF WATER IN FLOAT TANK. See CHAPTER V, B-1.

3. If detergent solution is desired, fill solution tank 3/4 full with water. Add Sioux Powder Cold Pressure Washer Detergent to Water. See Section E, Chapter III. Mix well.

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CHAPTER III - OPERATION

Section B - OPERATION FOR HIGH PRESSURE WASHING (Cont.)

4. Lock the washer gun in the open position.

5. The unit is now ready to operate and can be activiated by turning pump switch "ON." This switch is located on the front of the machine.

6. Prime pump and piping compartments with water, completely replacing all air in the system until a steady stream of water flows from the washer gun.
   a) Turn pump switch "ON."
   b) Open solution valve partially to purge air from detergent line. In extreme cases it may be necessary to remove hose from washer to get pump to prime. After unit is primed, turn pump switch OFF and attach desired wash nozzle.

7. Keep solution tank strainer covered by water or solution at all times.

8. On initial start-up, use some detergent solution to loosen check valve. While it is not necessary to use detergent solution, it is recommended on initial start-up.

9. Regulate amount of detergent solution required by adjusting solution valve.

10. When ready for rinsing, simply close solution valve.

11. Units with trigger guns allow operator to shut off water flow. As pressure builds up in the unit, the unloader valve opens and by-passes water back to the float tank.

CAUTION

NEVER RUN THE PUMP WITHOUT WATER. DO NOT ALLOW PUMP TO UNLOAD WATER FOR LONG PERIODS OF TIME, AS THIS WILL CAUSE CAVITATION (THE FORMATION OF A VACUUM) CAUSING PUMP TO BIND.

12. For longer life of your unit, we recommend ONLY the use of SIOUX POWDER COLD PRESSURE WASH DETERGENT. See Chapter III, Section D.

Section C - SHUTDOWN PROCEDURE

1. Shut off solution valve.

2. Shut off pump switch.

3. Allow pressure to expire from gun before closing trigger.

4. If unit is to be inoperative for an extended period of time, disconnect water and electrical supply. Also prevent freezing of equipment. See Chpater IV, Section D.

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CHAPTER III
Section D - SIOUX POWDER COLD PRESSURE WASHER DETERGENT

1. Sioux Cold Pressure Washer Detergent is a powdered detergent formulated for Sioux Steam Cleaner Corporation and is the ONLY COMPOUND WE RECOMMEND FOR SIOUX EQUIPMENT because: --

(a) Sioux Powerwash is a specially formulated compound designed to completely remove road film, grime, mud and salt deposits without spotting or streaking, and leaves no residue.

(b) Controlled, uniform suds give quick, easy rinsing. Water sheds off thoroughly.

(c) Detergent will remove road film and salt deposits without spotting or streaking.

(d) Sioux Powerwash is a fast acting bio-degradable detergent that has been tested exhaustively in actual conditions and proven superior and economical for all types of Sioux high pressure cold water washers.

(e) Product is safe for painted wood, glass or metal surfaces.

(f) Does not harm rubber.

2. Should you still decide to use another detergent, read the following requirements carefully to help you select a compatible pressure washer cleaning compound.

It must:
(a) BE FULLY DISSOLVABLE.
(b) BE NON FOAMING.
(c) CONTAIN NO ABRASIVES OR ORGANIC MATERIAL.
(d) BE STABLE IN SOLUTION.
(e) CONTAIN NO CORRSIVES.

Section E - CLEANING INSTRUCTIONS

1. Add Sioux Powder Cold Pressure Washer Detergent to water in solution tank. For regular maintenance cleaning, add 1 to 2 cups or 3 to 4 cups for heavy duty cleaning.

2. Without opening the solution valve, wet surface with clear water, starting from the bottom and working up.

3. Open the solution valve and adjust to desired strength of solution to be mixed with water from pump through system. Spray the entire surface generously and allow the solution to remain on the surface for a few minutes, in order to dissolve the soil and break the surface film.

4. Rinse completely with clear water before the solution dries, using a 25°-40° tip. If solution has dried, respray with solution and then rinse with clear water.

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CHAPTER IV - MAINTENANCE/STORAGE

Section A - DAILY MAINTENANCE CHECK LIST

1. Prime water system if necessary.
2. Insure wash tips are clear of obstruction.
3. Verify correct operation pressure.
4. Maintain proper oil level of water pump at inspection plug. See APPENDIX A.
5. Check hose and fittings.
6. Fill solution tank as required.
7. Be sure liquid covers detergent strainer.

Section B - PERIODIC MAINTENANCE REQUIREMENTS

1. Tighten loose fittings and check electrical connections for tightness.
2. Replace check valve when necessary.
3. Check float and solution tank strainers.
4. Clean algae and build-up in water intake system and suction piping.
5. Inspect pump for leaks and replace wearing parts as required.

Section C - PUMP MOTOR MAINTENANCE

Lubrication of motor should be in accordance with instructions on nameplate or terminal box. If no instructions are supplied, the following guidelines are offered:

1. Open Motors: Clean away dirt around openings with an air jet.
2. Enclosed Motors: Blow away dirt around openings with an air jet.
3. Ball Bearing Motors: Only lubricate if zerk fittings are supplied, and then only every two years. CAUTION: DO NOT OVER-LUBRICATE!!!
4. Sleeve Bearing Motors: Lubricate 10-15 drops of 20-weight non-detergent oil only once every two years. CAUTION: DO NOT OVER-LUBRICATE!!!

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TROUBLESHOOTING CHECK SHEET CHAPTER V, TROUBLESHOOTING, contains information for locating and correcting many of the operating problems that may develop in your unit.

Each of the major problems is followed by a list of causes and remedies which will help you to determine corrective action that might be taken.

We have not listed all malfunctions that may occur, nor all causes and remedies, and you may experience problems other than those listed. Go over the information on this sheet before using the troubleshooting guide and you will probably solve your problem.

FIRST, REVIEW INSTALLATION REQUIREMENTS; CHAPTER I, PAYING PARTICULAR ATTENTION TO ELECTRICAL REQUIREMENTS AS OVER 90% OF PROBLEMS ARE DUE TO INADEQUATE ELECTRICALS AT THE MACHINE WHILE IN OPERATION. Check water supply. USE ONLY SIOUX POWDER COLD PRESSURE WASHER DETERGENT IN SOLUTION TANK.

SECOND, Check following list to help solve the most common problems:

1. **Wire size printed on drop cord you are using?____Is it grounded?____**
2. **Length of drop cord you are using?____**
3. **Rating of circuit breaker in electrical system you are using?____**
4. **Rating of electrical line "behind the wall" of outlet you are using?____**
5. **Gallons per minute of your water supply?____(measure into pail)**
6. **Is water supply interrupted?____**
7. **Reading on pressure gauge . WHILE UNIT IS OPERATING WITH WASH TIP ON GUN?_____**
8. **Air purged from solution system?____Air purged from water system?____**
9. **Are wash tips obstructed?____**
10. **Have any changes or alterations been made to original unit?____**
11. **Have you replaced any original parts?____Were they furnished by SIOUX factory?____**

If you are not able to solve your problem after CAREFULLY following the above, feel free to call us at the factory, (605)-763-2776 for help. Most problems can be solved on the telephone if you can supply ACCURATE INSTALLATION BACKGROUND & DATA. We will need to know the model number of your unit_____
serial number of your unit_____
and the problem you are experiencing.

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PROBLEM
CAUSE
REMEDY

A. FLOAT TANK OVERFLOWS

1. Float valve needs adjustment or is defective.
   Adjust float valve by loosening nut on side of valve arm. Set ball at least 4" above highest position without hitting tank lid. Replace if defective.

2. Float ball leaks.
   Replace float ball.

3. Water pressure to high.
   Water presssure should not be excessive. Install pressure regulator ahead of machines water inlet if necessary.

B. EXCESSIVELY HIGH, ERRATIC OR FLUCTUATING PRESSURE.

NA 1. Inadequate electrical supply at the machine. LOW VOLTAGE MAY CAUSE PUMP MOTOR TO RUN AT SLOW SPEED. Provide adequate electricals AT THE MACHINE. See Chapter I, Section A.

2. Air leak in water system, pump not primed.
   Check plumbing connections and piping for air leaks. PRIME PUMP AND WATER SYSTEM.

3. Obstruction in nozzle tips, gun or hose.
   Remove and clean wash tips, gun or hose. Delime wash tips if necessary.

4. Float valve upside down or not adjusted properly.
   Orient and adjust, assuring proper seating. Remove foreign matter from under seat and repair or replace as required.

5. Inadequate or interrupted water supply, low pressure on main water line or heavy demand at other outlets.
   Turn on inlet water supply and allow to remain open. Provide adequate water supply to pump.

6. Obstruction in pressure gauge line.
   Remove boths ends of line and clean. Reinstall. Secure fittings.

7. Discharge hoses too small or too long.
   Do not use undersized hose or fittings. Maximum length suggested for proper operation usually 100' for standard ratings.

C. EXCESSIVE VIBRATION AND NOISE.

1. Leaking check valve.
   Repair or replace.

NA 2. Bent motor shaft.
   Replace motor.

3. Improperly aligned pump shaft.
   Replace if necessary being sure to check for proper alignment.

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PROBLEM
CAUSE
REMEDY

C. EXCESSIVE VIBRATION AND NOISE. (continued)

4. Pump damaged or parts worn.
Replace damaged parts and check alignment before operating.

D. LOW PRESSURE.

1. Improper nozzle on wash gun.
Install proper nozzle.

2. Suction line partially blocked or leaks.
Clean suction line. Check for cracks or holes in line. Replace if necessary. Tighten all connections.

3. Pump valves, seats, or rings worn.
Replace worn parts.

4. Clogged inlet strainer.
Clean and reinstall.

5. Inlet line not primed.
Prime pump.

6. Pump air bound, may occur after float tank has run dry or after pump has been removed.
Operate pump until fully primed.

7. Pump worn.
Repair or replace.

E. NOISY WATER PUMP.

1. Insufficient water supply to pump.
Provide adequate water supply.

2. Air leakage in water system, pump not primed.
Check plumbing connections and piping for air leaks. PRIME PUMP AND WATER SYSTEM. Be sure to maintain water in all compartments of the water system. Always bleed air from detergent line.

3. Pulsation dampeners filled with water.
Remove and empty daily. Reinstall.

4. Pump needs lubrication.
Lubricate pump.

5. Pump worn.
Remove and repair pump as required or replace.

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OPERATING INSTRUCTIONS

Proper Installation

These are positive displacement pumps. A pressure relief valve must be installed in the system. Arrange inlet piping so that air cannot be trapped, and make sure all joints are airtight. Inlet piping must have an internal diameter equal to or greater than the internal diameter of the inlet fitting on the pump. We also recommend that a filter be fitted on the suction line to protect pump from foreign matter. Maximum negative pressure is 10 feet water lift; temperature maximum is 165° F.

A properly designed pressure relief mechanism **must** be installed in the discharge piping. Failure to install such relief mechanism could result in personal injury or damage to the pump or system. Pump should not be operated at more than 10% above maximum operating pressure shown on pump. General Pump • U.S. does not assume liability or responsibility for the operation of a customer's high pressure system.

Lubrication

Fill crankcase to dot on oil gauge window per specifications with SAE 20W or 30W non-detergent oil. **Change oil after 50-hour break-in period.** Change oil every three months or at 500 hour intervals thereafter. **Regular lubrication is the easiest, most efficient and least expensive element in preventive maintenance.**

RPM and pressure

Pump operation must be within RPM and pressure specifications. For other applications, consult General Pump • U.S.

Do not pump acids or abrasive fluids with this pump. Contact General Pump • U.S. for additional information on questionable fluids.

Freezing conditions

Pump must be protected from freezing conditions.

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